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mend them to all interested in the subject. They are moreover admirable pieces of book making, the paper, typography and binding being all that could be desired, while a number of half-tones, photogravures and maps add to their attractiveness. We may mention especially the frontispiece to volume one from a painting by Marian Eagle Clarke showing the Eddystone Lantern on the night of October 12, 1901, with swarms of migrant birds hovering about in the brilliant illumination.—W. S.

**Pycraft's 'A History of Birds.'**<sup>1</sup>—There is no recent book with which we are familiar that gives one a better idea of the breadth of ornithology than this volume and probably no book that the student of birds could read with more profit. Too many ornithologists are inclined to be narrow in their views of the study and to them such a work as Mr. Pycraft has produced will prove a revelation.

The amount of information that the author has managed to crowd between the covers of his book is amazing and no matter what the particular branch of ornithology in which we may be interested we are bound to find here illustrations that are new and comments that are suggestive. We may of course be able to pick out weak points in the treatment of certain subjects to which the author has never given especial study, and a few of his quotations may be from sources not thoroughly reliable, but slight delinquencies are inevitable in a work of such broad scope, and its general excellence and reliability are remarkable. Mr. Pycraft's keynote in this work is evolution; and he considers almost every conceivable phase of the relationship of birds to their environment and to one another.

His theories are often highly original and while there may be room for arguments on the other side, he never fails to present the matter in such a way as to provide ample food for thought. His chapters cover the following subjects. I. Introductory—General Structure of Birds; II–III. Phylogenetic—Origin and Relationship of Birds; IV. Ecological—Distribution, etc.; V. Seasonal Life; Effect of Light, Moisture and Temperature; VI. Migration; VII. Relations to Animate Environment; VIII. Peculiar Interrelations; IX. Phases of Social Life; X. Relations of the Sexes; XI. Nidification; XII. Concerning Eggs; XIII–XIV. Care of the Offspring; XV. Nestling Birds and what they Teach; XVI. The Life-History of Birds. XVII. Variation; XVIII. Acquired Characters; XIX. Natural Selection as Applied to Birds; XX. Artificial Selection; XXI. Sexual Selection; XXII. Isolation; XXIII–XXV. Structural and Functional Adaptations; XXVI. Convergent Evolution.

Mr. Pycraft's vast knowledge of avian anatomy enables him to cite

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<sup>1</sup> *A History of Birds.* | By | W. P. Pycraft | Zoological Department British Museum. | With an Introduction by | Sir Ray Lankester, K. C. B., F. R. S. | and numerous Illustrations and Diagrams | Methuen and Co. | 36 Essex Street, W. C. London [1910]—Svo, pp. i–xxi + 1–458, with 50 text illustrations and 37 plates, including frontispiece in colors. Price 10s. 6. net.

examples from the structure of various parts of the bird in every discussion of adaptation and development and these chapters impress us as the strongest. His treatment of geographic distribution is hardly up to date but it is difficult to treat this matter adequately in the short space allotted to it, and the same may be said of the chapter devoted to migration. All in all however, there is little to which exception can be taken in the plan and execution of the 'History of Birds.' It should be in every library and it cannot fail to broaden the views of the younger ornithologists and lead them into lines of research which will yield valuable results in the near future.—W. S.

**Headley's 'The Flight of Birds.'**<sup>1</sup>—The serious study of bird flight brings ornithology into the domain of physics and mathematics and since the average ornithologist does not care to go very far into this field of research a book like the present will find a very general welcome, attempting as it does to explain the subject with as few technicalities as possible. Mr. Headley considers flight under several heads: Gliding, Stability, Motive Power, Starting, Steering, Stopping, The Machinery of Flight, Varieties of Wing and of Flight, Pace, Wind and Flight, Some Accessories. Numerous excellent illustrations are taken from photographs of flying birds in various positions and under varied conditions.

In considering the sailing of Gulls against the wind, so often observed from a steamer's deck, Mr. Headley states definitely that the birds are poised on a steady upcurrent of air over the stern of the vessel, caused by the wind striking the sides of the vessel at an acute angle. Mr. William Brewster after careful consideration of this theory dismissed it absolutely after finding that the Gulls sailed equally well, in advance of the vessel, a hundred yards behind, or fifty yards to windward (cf. 'The Auk,' 1912, p. 90). Therefore it would seem that the last word on this problem is yet to be said and it might be profitable as has been suggested to compare the Gulls to the sailing of an ice yacht which, paradoxical as it may appear, goes faster the nearer it is brought into the 'teeth of the wind.'

Mr. Headley's book is a welcome contribution to an interesting subject, the more so since with the aid of gliders and aeroplanes man is beginning to face the same problems which the bird has solved so successfully.—W. S.

**Howard's British Warblers. Part VI.**<sup>2</sup>—The latest installment of this beautiful work consists of colored plates of the Willow, Savi's, Rufous and Icterine Warblers with text relating to all but the last, while four photo-

<sup>1</sup> The | Flight of Birds | By F. W. Headley, M. B. O. U. | Author of "The Structure and Life of Birds" | "Life and Evolution" &c | With Sixteen Plates | and Many Text Figures | Witherby & Co. | 326 High Holborn | London | 1912.—Crown 8vo., pp. i-x + 1-163, with 16 plates and 27 text figures. Price 5s. net.

<sup>2</sup> The | British Warblers | A History with Problems | of | their Lives | by H. Eliot Howard, F. Z. S., M. B. O. U. | Illustrated by Henrik Grönvold | London R. H. Porter | 7, Princes Street, Cavendish Square, W. | Price 21s. net.—Part 6, December, 1911.